sidered to be interfering signals with power P_J at the input to the circuit of FIG. **5**. The interfering signal may come from one or more nondesirable signals, noise, multipath signals, and any other source which would serve as an interfering signal to the first spread-spectrum signal. The received signal is normalized by the AGC circuit **61**. Thus, by way of example, the AGC circuit **61** can have the power output, $P_C+P_J=1$. The normalized received signal is despread by the correlator to receive a particular mobile user's signal, which in this case is shown by way of example as the mixer **67**, chip-code generator **65** and filter **68**. The chip-code generator **65** generates a chip-sequence signal using the same chip-sequence as the first spread-spectrum signal. The despread signal is filtered by filter **68**, and the output of the filter **68** is the normalized power of the first spread-spectrum signal plus the normalized power of the interfering signal divided by the processing gain, PG, of the spread-spectrum system. The power measurement circuit **75** can process the despread-received signal with the received signal and output the received-power level of the first spread-spectrum signal. The power level of the interfering signal is reduced by processing gain, PG.

The power measurement circuit **75** can process the received signal with the despread, normalized received signal by multiplying the two signals together, or by logarithmically processing the received signal with the despread received signal. In the latter case, the logarithm is taken of the power of the received signal, P_C+P_J, and the logarithm is taken of the despread, normalized received signal. The two logarithms are added together to produce the received-power level.

A key element for the present invention to work is to keep almost constant the despread signal, independently of variations of the other signals or of obstructions. A preferred implementation to accomplish this end is shown in the circuitry of FIG. **5**. FIG. **5** shows a way for determining at the base station the power of the first spread-spectrum signal when the received signal includes multiple signals and noise. If the circuitry of FIG. **5** were not used, then it is possible that the interfering signal, which may include noise, multipath signals, and other undesirable signals, may raise the power level measured at the input to the receiver of the base station, thereby suppressing the first spread spectrum signal. The undesirable power level measured may cause the remote station to transmit more power than required, increasing the amount of power received at the base station.

FIG. **6** illustrates the base station automatic power control circuit of FIG. **1**, with the concepts from FIG. **5** added thereto. Shown in FIG. **6** are automatic gain control (AGC) means, power means, comparator means, transmitter means, and an antenna. The AGC means is shown as an automatic-gain-control (AGC) amplifier **72**, correlator means is shown as correlator **74** with filter **76**, and power means is shown as power measurement device **78**. The comparator means is shown as comparator **70**, the transmitter means is shown as power amplifier **58** coupled to the antenna **56**. Also illustrated is a control word generator **59** coupled between comparator **70** and power amplifier **58**.

The AGC amplifier **72** is coupled between the bandpass filter **60** and the correlator **74**. The filter **76** is coupled to the output of the correlator **74**. The power measurement device **78** is coupled to the AGC amplifier **72** and the filter **76**. The comparator **70** is coupled to the output of the power measurement device **78** and to the control word generator **59**. The multiplexer **134** is coupled between the control word generator **59** and the power amplifier **58**. The control word generator **59** is coupled between the comparator **70** and the multiplexer **134**. The power amplifier **58** is coupled to the antenna **56**.

A threshold level is used by the comparator **70** as a comparison for the received-power level measured by the power measurement device **78**.

For each received signal, the AGC amplifier **72** generates an AGC-output signal. The AGC-output signal is despread to obtain the signal of user one using correlator **74** and filter **76**. The despread-AGC-output signal from the filter **76** is processed with the received signal from the AGC amplifier **72**, by the power measurement device **78**. The received signal to the power measurement device **78** may be a AGC-control-voltage level from the AGC amplifier **72**.

The power measurement device **78** processes the received signal with the despread-AGC-output signal, for generating a received-power level. As mentioned previously for FIG. **1**, the power measurement device can process the received signal with the despread-AGC-output signal by multiplying the two signals together, or by logarithmically processing the received signal with the despread-AGC-output signal.

The comparator **70** generates a comparison signal by comparing the received-power level generated by the power measurement device **78**, to the threshold level. The comparison signal may be an analog or digital data signal. Broadly, the control word generator **59** can convert the comparison signal to a digital data signal, i.e., the power-command signal, for controlling the variable-gain device **111** of FIG. **2**. The variable-gain device **111** uses the power-command signal, as processed by the control word generator **59**, as a basis for adjusting a transmitter-power level of the first spread-spectrum signal transmitted by the mobile station.

In operation, a mobile station in a cell may transmit the first spread-spectrum signal on a continuous basis or on a repetitive periodic basis. The base station within the cell receives the first spread-spectrum signal. The received first spread-spectrum signal is acquired and despread with the chip-sequence signal from chip-sequence generator and product device. The despread first spread-spectrum signal is filtered through bandpass filter. The base station detects the despread first spread-spectrum signal using envelope detector, and measures or determines the received-power level of the first spread-spectrum signal. The base station generates the power-command signal from the received-power level.

The power-command signal may be transmitted on the same channel as the second spread-spectrum signal using the same chip sequence as the second spread-spectrum signal. In this case, the power-command signal is transmitted at a different time interval from when the second spread-spectrum signal is transmitted. This format allows the mobile station to acquire synchronization with the first sequence, using the second spread-spectrum signal.

As an alternative, the power-command signal may be transmitted on a different coded channel using a second chip sequence. In the latter case, the second spread-spectrum signal having the power-command signal would be acquired by the second chip-code generator and second product device. In either case, the power-command signal is demultiplexed using demultiplexer **109**. Further, the power-command signal may be time division multiplexed or frequency division multiplexed with the second spread-spectrum signal.

The present invention also includes a method for automatic-power control of a spread-spectrum transmitter for a mobile station operating in a cellular-communications network using spread-spectrum modulation, with the mobile station transmitting a first spread-spectrum signal. In use, the